TULANE STUDIES IN ZOOLOGY

Volume 1, Number 6 September 15, 1953

A NEW BURROWING CRAWFISH OF THE GENUS *PROCAMBARUS* FROM LOUISIANA AND MISSISSIPPI

(DECAPODA, ASTACIDAE)

GEORGE HENRY PENN,

DEPARTMENT OF ZOOLOGY, TULANE UNIVERSITY OF LOUISIANA, NEW ORLEANS.

TULANE UNIVERSITY

NEW ORLEANS

TULANE STUDIES IN ZOOLOGY is devoted primarily to the zoology of the area bordering the Gulf of Mexico. Each number is issued separately and deals with an individual study. As volumes are completed, title pages and tables of contents are distributed to institutions exchanging the entire series.

Manuscripts submitted for publication are evaluated by the editor and by an editorial committee selected for each paper. Contributors need not be members of the Tulane University faculty.

Manuscripts should be submitted on good paper, as original typewritten copy, double-spaced, and carefully corrected.

Separate numbers may be purchased by individuals, but subscriptions are not accepted. Authors may obtain copies for personal use at cost.

Address all communications concerning exchanges, manuscripts, editorial matters, and orders for individual numbers to the editor. Remittances should be made payable to Tulane University.

When citing this series authors are requested to use the following abbreviations: *Tulane Stud. Zool.*

Price for this number: $0.25.

George Henry Penn, *Editor,*
c/o Department of Zoology,
Tulane University of Louisiana,
New Orleans, U. S. A.

A NEW BURROWING CRAWFISH OF THE GENUS *PROCAMBARUS* FROM LOUISIANA AND MISSISSIPPI

(DECAPODA, ASTACIDAE)

GEORGE HENRY PENN,
Department of Zoology, Tulane University of Louisiana, New Orleans.

The new species of *Procambarus* described herein occurs over a fairly wide geographic area, however, it has never been found in large numbers and is a rarely encountered form. Ecologically it may be included among the secondary burrowers (Hobbs, 1942: 20). The relationships of this new species are not clear and will be discussed following the description.

PROCAMBARUS PLANIROSTRIS, *sp. nov.*

Holotype male, form I.—Body subovate, appearing somewhat compressed; abdomen about equal to length of cephalothorax (29.0 - 27.5 mm). Height of cephalothorax (figs. 1, 2) slightly less than width in region of caudodorsal margin of the cervical groove (12.5 - 13.0 mm); greatest width of cephalothorax slightly caudad of caudodorsal margin of the cervical groove.

Areola narrow (20 times longer than width), with a single punctation in the narrowest part; cephalic portion of cephalothorax about 1.75 times as long as the areola; length of areola about 36 percent of total length of cephalothorax.

Rostrum without lateral spines; widest at base, margins slightly raised and only slightly thickened, converging at acumen. Upper surface almost flat, moderately punctate. Acumen small, directed dorsally at tip.

Postorbital ridges reduced, terminating anteriorly without spines; lateral surface excavate. Branchiostegal spine small. Cervical groove interrupted laterally; lateral spine reduced to the size of a large tubercle. Lateral surfaces of cephalothorax granulate, dorsal surface moderately granulate.

Cephalic region of telson with spines in each caudolateral angle, three on right, five on left.

Epistome (fig. 3) slightly more than twice as wide as long, with slightly concave center; cephalic margin with a small spine.

Antennae nearly equal to total length of the crawfish; of normal form. Antennal scale (fig. 4) narrow; widest a little distad of middle; lateral margin inflated, straight and terminating distally in a small spine; total length less than length of areola (8.5 - 10.0 mm).

Chela (fig. 5) with palm inflated; fingers slightly depressed; setiferous punctations present over dorsal surface of most of palm and both fingers. Inner margin of palm with a row of eight prominent

tubercles. Both fingers terminating in short corneous tips, that of the dactyl overhanging the other when the fingers are closed. Thirteen rounded tubercles at base and one distally-located corneous tubercle on opposable margin of immovable finger; fourteen rounded tubercles in corresponding positions on the dactyl. Upper surface of dactyl with seven strong tubercles basally.

Carpus (fig. 5) with five strong spines on distal end in a semicircular arrangement extending medioventrally from dorsal to ventral condyles which articulate with the chela. Upper surface with smaller tubercles toward inner margin and scattered setiferous punctations generally.

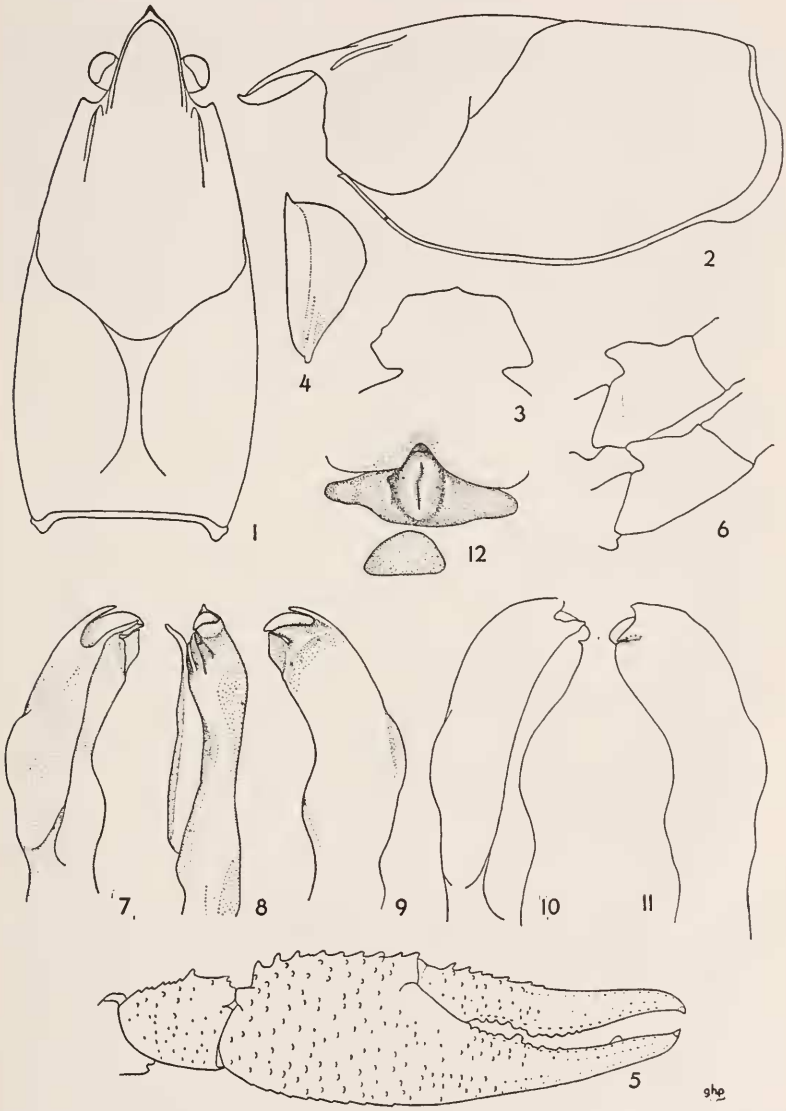
Simple hooks (fig 6) present on ischiopodites of third and fourth pereiopods; length of each greater than half the diameter of the respective ischiopodites.

First pleopod (figs. 7, 8, 9) reaching to anterior side of the coxopodite of the third pereiopods when the abdomen is flexed. Apex terminating in four distinct parts which as a unit extend cuadad at about a 40° angle to the shaft of the pleopod. Mesial process noncorneous, spiniform, directed caudodistad, and not extending beyond the other terminal parts; cephalic process corneous, arising on mesial side of the central projection, directed caudodistad, excavate on caudolateral surface, and closely applied to the central projection; central projection corneous, compressed, "beak-like" in shape, with apex directed caudad; fusion line of centrocaudal and centrocephalic components clearly indicated. Caudal process consisting of two corneous parts: mesially a low, longitudinal ridge flanked laterally by a leaflike element which extends distally, its apex coming in contact with the overhanging central projection. Cephalic margin of the shaft of the pleopod with a distinct shoulder.

Morphotype male, form II.—Very similar to holotype in general appearance; chelae and hooks on ischiopodite of the third and fourth pereiopods greatly reduced. First pair of pleopods (figs. 10, 11) reaching to middle of coxopodites of third pereiopods when the abdomen is flexed; all processes reduced and non-corneous.

Allotype female.—Very similar to holotype in general appearance; chelae greatly reduced. Annulus ventralis (fig. 12) immovable, roughly spindle-shaped with center produced into a cone-shaped protuberance on either side of which is a shallow groove. The sinus originates on the center line a short distance removed from the anterior margin then proceeds through a gently zigzag course to the apex of the central, cone-shaped protuberance. The sternum of the preceding thoracic segment is slightly produced so that its posterior margin underhangs the anterior margin of the annulus.

Color.—The following color notes were made from living mature specimens collected at the type locality. In general this is a drab-colored species. The effect is that of a light tan overcast with olive



Figures 1 - 12. *Procambarus planirostris*, sp. nov.: **1, 2,** cephalothorax of the holotype; **3,** epistome of the holotype; **4,** antennal scale of the holotype; **5,** chela and carpus of the holotype; **6,** hooks on ischiopodites of the third and fourth pereiopods of the holotype; **7, 8, 9,** mesial, caudal and lateral views of the first pleopod of the holotype; **10, 11,** mesial and lateral views of the morphotype; **12,** annulus ventralis of the allotype. Pubescence removed from all structures illustrated.

dorsally on the cephalothorax; the rostrum tan only. Abdomen dorsally with an inconspicuous wide stripe of olive-tan which tapers to a point on the base of the telson; background color of abdomen on either side of the dorsal stripe is a light tan with very fine flecks of darker reddish-tan; this background color extends also onto the dorsal surface of the telson and uropods. On the dorsolateral parts of the abdominal tergites there is a row of spots of olive, one on the anterior margin of each tergite, and connected longitudinally by a faint line of olive. Chelae of the same basic color as the background color of the abdomen, but tubercles capped with black or dark brown, giving the chela and carpus a fine-spotted appearance. One specimen had a faint bluish cast to the fingers.

Measurements.—As follows, in millimeters:

	Holotype	Allotype	Morphotype
Cephalothorax:			
Length	27.5	20.0	29.0
Width (greatest)	13.5	10.0	14.0
Height (greatest)	12.5	9.5	13.5
Areola:			
Length	10.0	7.5	10.5
Width (at narrowest point)	0.5	0.5	0.7
Rostrum:			
Length	5.5	4.0	6.5
Width at base	5.5	3.5	5.5
Abdomen:			
Length (to tip of telson)	29.0	22.0	29.0
Right chela:			
Length of outer margin of hand	25.5	11.0	21.0
Length of dactyl	15.0	6.0	12.0
Width of palm (greatest)	8.5	4.0	7.5
Thickness of palm (greatest)	6.0	2.5	5.0
Length of inner margin of palm	10.0	4.0	8.0

Type locality.—The holotype and allotype were collected from a low area of mixed hardwood, pine and palmetto flatwoods one mile south of Walker (on Louisiana highway 336), Livingston Parish, Louisiana. The holotype was taken on February 17, 1951 by Dr. R. D. Suttkus when the area was inundated by about a foot of water; the allotype was collected on August 29, 1952 by the author and C. E. Biggs from a simple burrow with a neat chimney, around the base of which there was about six inches of standing water. The soil here is a whitish clay and the burrow extended to about twelve inches beneath the soil surface. At the same place there were numerous burrows of *Cambarus hedgpethi* Hobbs and *Orconectes clypeatus* (Hay).

The morphotype was collected from a small creek three miles south of Janice, Perry County, Mississippi on January 28, 1951 by Dr. Fred R. Cagle. No other crawfishes were found at this locality.

Disposition of types.—The holotype, allotype and morphotype are deposited in the United States National Museum, catalogue numbers 95674, 95675, and 95676 respectively. The paratypes are in the following collections: Academy of Natural Sciences, Philadelphia (1 ♂I, 2 ♂♂ juv., and 1 ♀), the personal collection of Dr. Horton H. Hobbs Jr. at the University of Virginia (1 ♂I, 1 ♂ juv., and 1 ♀), and Tulane University (2 ♂♂I, 7 ♂♂ juv., 4 ♀♀, and 6 ♀♀ juv.).

Geographic distribution.—The type series of *Procambarus planirostris* was collected from the "Florida" parishes of southeastern Louisiana and southern Mississippi. These records and a summary of the deposition of these specimens are as follows. LOUISIANA: *East Baton Rouge Parish:* 9 mi. s. Baton Rouge, January 26, 1949, G. H. Bick and L. L. Ellis (TU 910); *Livingston Parish:* 1 mi. s. Walker, February 17, 1951, R. D. Suttkus (USNM, TU 2278), same locality, July 19, 1952, G. H. Penn, R. D. Suttkus and C. E. Biggs (ANS, HHH), same locality, August 20, 1952, G. H. Penn and C. E. Biggs (USNM); *St. Tammany Parish:* Lake Pontchartrain at Mandeville, February 22, 1935, P. Viosca, Jr. and H. B. Chase (TU P-610); *Washington Parish:* 6 mi. nw. Enon, August 10, 1948, G. H. Penn and M. H. Penn (ANS), Franklinton, March 27, 1949, F. R. Cagle (ANS, HHH), 2 mi. n. Varnado, March 3, 1953, F. R. Cagle (TU 2894). MISSISSIPPI: *Perry County:* 3 mi. s. Janice, January 28, 1951, F. R. Cagle (USNM, TU 2853).

Relationships.—*Procambarus planirostris* appears not to belong definitely in any of the sections of *Procambarus* as currently recognized, but has certain characteristics of each of two sections, and apparently occupies a somewhat intermediate position between the two. It shows affinities with the *Barbatus* Section (Hobbs, 1942: 35-36) in its general body conformation and in that the cephalic process of the first pleopod arises from the mesial side of the central projection, but differs from members of this section in lacking the accessory cephalodistal ridge or knob-like prominence. It shows closer affinities with the *Clarkii* Subgroup of the *Blandingii* Section as defined by Hobbs (1942: 93, 98-99) in possessing a distinct shoulder on the cephalic margin of the first pleopod, and in the general configuration of the annulus ventralis.

Because *P. planirostris* exhibits this peculiar combination of characteristics a new section to accommodate it could be justified. However, because of its assumed closer relationship to the species of the *Clarkii* Subgroup of the *Blandingii* Section than to those of the *Barbatus* Section, I am placing it in a separate subgroup, the *Planirostris* Subgroup in the *Blandingii* Section. This action necessitates the modification of Hobbs' diagnosis (1942: 93) with regard to the cephalic process of the first pleopod to the following: cephalic process when present arises from cephalic or cephalolateral margin in all species except those of the *Planirostris* Subgroup in which it arises from the mesial side of the central projection.

REFERENCE CITED

HOBBS, HORTON H., JR. 1942. The crayfishes of Florida. *Univ. Fla. Publ., Biol. Sci. Ser.*, 3(2): 1-179.